Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1-16. (canceled).

Claim 17. (previously presented) A method for synchronizing a base station with a mobile station, the method comprising the steps of:

forming a synchronization sequence y(i) of length n, to be emitted by the base station, in accordance with the following relationship from a first constituent sequence x1 of length n1 and a second constituent sequence x2 of length n2: $y(i) = x_2(i \bmod n_2) * x_1(i \operatorname{div} n_2)$ for $i = 0 \ldots (n_1 * n_2) - 1$; and

forming at least one constituent sequence x_1 or x_2 in accordance with the following relationship from a third constituent sequence x3 of length n3 and a fourth constituent sequence x4 of length n4:

$$x_1(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3),\ i = 0 \ldots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3),\ i = 0 \ldots (n_3 * n_4) - 1.$$

Claim 18. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence y(i) is of length 256, and the constituent sequences x1, x2 are of length 16.

Claim 19. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein at least one of the constituent sequences x1 or x2 is a Golay sequence.

Claim 20. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein at least one of the two constituent sequences x_1 or x_2 is a Golay sequence which is based on the following parameters:

delay matrix $D^1 = [8, 4, 1,2]$ and weight matrix $W^1 = [1, -1, 1,1]$; or

delay matrix $D^2 = [8, 4, 1,2]$ and weight matrix $W^2 = [1, -1, 1,1]$.

Claim 21. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein x_3 and x_4 are identical Golay sequences of length 4 and are based on the following parameters:

delay matrix $D^3 = D^4 = [1, 2]$ and weight matrix $W^3 = W^4 = [1,1]$.

Claim 22. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein a Golay sequence a_N is defined by the following recursive relationship:

$$a_0(k) = \delta(k) \text{ and } b_0(k) = \delta(k)$$

$$a_n(k) = a_{n-1}(k) + W_n \cdot b_{n-1}(k-D_n),$$

$$b_n(k) = a_{n-1}(k) - W_n \cdot b_{n-1}(k-D_n),$$

$$k = 0, 1, 2, \ldots, 2^N,$$

$$n = 1, 2, \ldots, N,$$

$\delta(k)$ Kronecker delta function

Claim 23. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence y(i) is received by a mobile station and processed for synchronization purposes.

Claim 24. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein in order to determine a prescribed synchronization sequence y(i) contained in a received signal sequence, correlation sums of the synchronization sequence y(i) are determined in the mobile station with the aid of corresponding sections of the received signal sequence.

Claim 25. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 24, at least one efficient Golay correlator is used to determine at least one correlation sum.

Claim 26. (previously presented) A transmitting unit comprising:

a part for storing or forming a synchronization sequence y(i), which can be formed in accordance with the following relationship from a first constituent sequence x1 of length n1 and a second constituent sequence x2 of length n2:

$y(i) = x_2(i \bmod n_2) * x_1(i \operatorname{div} n_2)$ for $i = 0 \ldots (n_1 * n_2) - 1$, wherein it is further possible to form at least one constituent sequence x_1 or x_2 in accordance with the following

relationship from a third constituent sequence x3 of length n3 and a fourth constituent sequence x4 of length n4:

$x_1(i) = x_4(i \; mod \; s + s^*(i \; div \; sn_3)) * x_3((i \; div \; s) \; mod \; n_3), \; i = 0 \ldots (n_3 * n_4) - 1$; or

$x_2(i) = x_4(i \; mod \; s + s^*(i \; div \; sn_3)) * x_3((i \; div \; s) \; mod \; n_3), \; i = 0 \ldots (n_3 * n_4) - 1$, and

a part for emitting the synchronization sequence y(i) for synchronization with a receiving unit.

Claim 27. (previously presented) A mobile station comprising:

a part for receiving a received signal sequence; and

a part for determining a synchronization sequence y(i), which can be formed in accordance with the following relationship from a first constituent sequence x1 of length n1 and a second constituent sequence x2 of length n2:

$y(i) = x_2(i \text{ mod } n_2) * x_1(i \text{ div } n_2)$ for $i = 0 \ldots (n_1 * n_2) - 1$, wherein it is further possible to form at least one constituent sequence x_1 or x_2 in accordance with the following relationship from a third constituent sequence x3 of length n3 and a fourth constituent sequence x4 of length n4:

$x_1(i) = x_4(i \; mod \; s + s^*(i \; div \; sn_3)) * x_3((i \; div \; s) \; mod \; n_3), \; i = 0 \ldots (n_3 * n_4) - 1$; *or*

$x_2(i) = x_4(i \; mod \; s + s^*(i \; div \; sn_3)) * x_3((i \; div \; s) \; mod \; n_3), \; i = 0 \ldots (n_3 * n_4) - 1.$

Claim 28. (previously presented) A mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence y(i) includes at least one efficient Golay correlator.

Claim 29. (previously presented) The mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence y(i) includes two series-connected matched filters which are designed as efficient Golay correlators.

Claim 30. (currently amended) A method for transmitting and receiving synchronization sequences, the method comprising the steps of:

composing a synchronization sequence from two constituent sequences, wherein said synchronization sequence is structured having the following characteristics:

$$\underline{y(i) = x_2\,(i \bmod s + s*(i \operatorname{div} sn_1))\ *x_1\,((i \operatorname{div} s) \bmod n_1),\ i = 0,\ldots(n_1*n_2)\text{-}\ 1,}$$

where $y(i)$ is the synchronization sequence having a length of $(n_1 * n_2)$ from two constituent sequences x_1 and x_2 of length n_1 and n_2;

repeating a first constituent sequence in accordance with the number of elements of a second constituent sequence;

modulating all the elements of a specific repetition of the first constituent sequence with the corresponding element of the second constituent sequences; and

mutually interleaving the repetitions of the first constituent sequence.

Claim 31. (canceled)

Claim 32. (previously presented) A method for transmitting and receiving synchronization sequences as claimed in claim 30, wherein a constituent sequence x_2 is

composed from two constituent sequences x_3 of *length* n_3 and x_4 of *length* n_4 in accordance with the formula $x_2(i) = x_4(i \ mod \ s + s*(i \ div \ sn_3))*x_3 \ ((i \ div \ s) \ mod \ n_3), \ i = 0,...(n_3*n_4)- 1,$ or is a Golay sequence.

Claim 33. (currently amended) A method for transmitting and receiving synchronization sequences as claimed in claim ~~31~~30, wherein a constituent sequence x_2 is composed from two constituent sequences x_3 of *length* n_3 and x_4 of *length* n_4 in accordance with the formula $x_2(i) = x_4(i \ mod \ s + s*(i \ div \ sn_3))*x_3 \ ((i \ div \ s) \ mod \ n_3), \ i = 0,...(n_3*n_4)- 1,$ or is a Golay sequence.